Minutes of spin meeting 05/14/08

Waldo presented his tracking results of 10000 particles through BtA and A15 multi-wires with multiple scattering effect considered. For the simulation, all four BtA multi-wires are inserted, which only resulted about 1% particle loss. So the effect on the profiles at A15 in the AGS is expcted to be small. The results show that the profiles are fitted better with two Gaussian profiles, but the central narrow ones show no emittance growth in vertical plane and about 6% in the horizontal plane. Next Waldo simulated the case with 3mm horizontal shift before entering AGS. Woody believes that the real data indicated a steering error. Dejan commented that this tool can predict the beam profiles in the A15 and be used to design our future experiment. Leif commented that the beta function mismatch has not been touched in the simulation. Waldo did not tune the aperture parameter to reproduce the beam life time with A15 inserted, but the number are fairly close to experimental results. More should be follow on this to compare with existing A15 profile data.

Haixin then presented the extrapolation of beam polarization with higher intensity based on spin tracking. Both the effects from horizontal and vertical resonances can be estimated from spin tracking. Thomas pointed out that the fitting for the vertical emittance dependence can be replaced by a parabolic fit. Based on the emittances as functions of intensity, the polarization level at various intensities can be estimated (given in the presentation). Mei commented that the betatron tune spread should be included in the spin tracking. Haixin then listed all intensity scans done between 2006 and 2008. The data suggested that one can not assume zero emittance at a virtual zero intensity. Thomas pointed out that the emittance at zero intensity can not be zero at AGS entrance. It is then important to fit the polarization dependence on intensity with this effect for various intensity scans.

Anatoli showed comparison of emittance measurement with IPM and CNI polarimeter target scan as function of intensity in run8 for injection-to-front-porch case. The emittances measured by the two devices have different slope/dependence on intensity. It may mean that they have different intensity effects. Dejan suggested to use targets with different size for polarimeter target scan to rule out rate dependence. The results underline our difficulty to get solid emittance values in the AGS.

Next meeting Anatoli will present the analysis of proton-Deuteron polarimeter results (from past) at 200MeV.

Haixin